



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,569	08/24/2006	Yoshio Kanzaki	KANZAKI I	8584

1444 7590 12/13/2007
BROWDY AND NEIMARK, P.L.L.C.
624 NINTH STREET, NW
SUITE 300
WASHINGTON, DC 20001-5303

EXAMINER

NGUYEN, KHANH TUAN

ART UNIT	PAPER NUMBER
----------	--------------

1796

MAIL DATE	DELIVERY MODE
-----------	---------------

12/13/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,569	Applicant(s) KANZAKI, YOSHIO	
	Examiner Khanh T. Nguyen	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>28 November 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The preliminary amendment filed on 08/24/2006 is entered and acknowledged by the Examiner. Claims 34-49 are currently pending in the instant application. Claims 1-33 have been canceled.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicant's Priority Documents were filed on 02/24/2004.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 11/28/2006 have been initialed by Examiner.

Drawings

4. The drawing(s) submitted on 08/24/2006 have been considered by Examiner.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The Examiner noted that a hydrolysis step is not necessarily needed for producing phosphorous-acid-group-containing (meth)acrylamide (Specification page 9, lines 11-14).

7. Claims 34-36, 37, 39, 40-42, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagan (U.S. Pat. 5,393,436 hereinafter, "Nagan").

With respect to claims 34-36, 41-42, and 49, Nagan teaches a method of preparing a polyacrylamide-phosphonic acid material (i.e. polymer) having a high charge density by Sortwell method and apparatus for water treatment (Col. 2, lines 25-30 and Col. 2, line 63 to Col. 3, line 10). The said polyacrylamide-phosphonic acid polymer is prepared by adding phosphorous acid to an acrylamide polymer solution under acid conditions (pH between 1-2) at temperatures ranging between 34° F and about 200° F (about 1° C and about 93° C) (Col. 2, lines 54-62). The acrylamide polymer may be selected from homogenous or a copolymer of acrylamide and methacrylamide, acrylate or metal salts of acrylic acid (Col. 3, lines 20-28). The solid level (mass %) of said acrylamide polymer is only limited by the ability of the polymer to quickly obtain a homogeneous mixture with the phosphorous acid (Col. 4, lines 32-36). The amount of phosphorous acid ranges from about 20-200 mole % based on the acrylamide backbone content (Col. 4, lines 36-43). Nagan teaches the said

polyacrylamide-phosphonic acid polymer having phosphono pendants (i.e. phosphorous acid groups) attached to the amides groups of the polyacrylamide backbone (Col. 2, lines 30-40). The disclosure, in its broadest interpretation, is considered to read on the phosphorous-acid-group-containing (meth)acrylamide having a phosphorous acid group directly bonded to a nitrogen atom of an amide group in the (meth)acrylamide monomer. Nagan teaches a substantially similar process and substantially similar polyacrylamide-phosphonic acid material, therefore the said polyacrylamide-phosphonic acid material should reasonably comprise comonomers containing similar amount of ethylenically unsaturated bonds and one or more (or none) acid groups in the molecule.

Nagan failed to teach a phosphorous-acid-group-containing (meth)acrylamide presented by formula (9) and/or formula (11).

However, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have formulated a phosphorous-acid-group-containing (meth)acrylamide polymer with the structure of formula (9) and formula (11) because such as reaction for bonding a phosphorous acid group to an amide group in the (meth)acrylamide backbone is taught by Nagan in order to provide a high charge density polymer (Col. 2, lines 25-30).

Regarding claims 37, 39, and 40, the subject matter would have been obvious to the skilled artisan because the patentability of a product by process claim does not depend on its method of production and where the examiner has found a similar product, the burden rests with the applicant to prove that that product is patentably

distinct. See *In re Thorpe*, 227 USPQ 964 (CAFC 1985); *In re Marosi et al*, 218 USPQ 289; *In re Pilkington*, 162 USPQ 145. "The lack of physical description in a product-by-process claim makes the determination of the patentability of the claim more difficult, since in spite of the fact that the claim may recite only process limitations, it is the patentability of the product claimed and not the process that must be established. We are therefore of the opinion that when the prior art discloses a product which reasonably appears to be identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad processes put before it and then obtain prior art products and make physical comparisons therewith." *In re Brown*, 173 USPQ 685,688 (CCPA 1972).

8. Claims 38, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagan (U.S Pat. 5,393,436) as applied to the above claims, and further in view of Osada et al. (Machine English Translated JP Pub. 09-324391 hereinafter, "Osada").

Nagan is relied upon as set forth above. With respect to instant claims 38, 43, and 44, Nagan failed to suggest (a) an unsaturated comonomer (i.e. cross-linking agent) containing one or more ethylenically unsaturated bonds and one or more acid groups in a molecule, and/or (b) an unsaturated comonomer containing one or more ethylenically unsaturated bonds but no acid group in a molecule.

In an analogous art, Osada teaches the acrylamide (meta) system water-dispersion macromolecule comprising a cross-linking monomer having two or more ethylenically unsaturated bonds to provide sufficient paper durability effectiveness ([0018]-[0020]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the phosphorous-acid-group-containing (meth)acrylamide material of Nagan by incorporating a cross-linking monomer containing ethylenically unsaturated bonds as suggested by Osada in order to provide sufficient durability effectiveness to paper.

9. Claims 34-36, 37, 39, 40-42, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitani (Machine English Translated JP Pub. 55-025473 hereinafter, "Kitani") in view of Nagan (U.S Pat. 5,393,436).

Kitani teaches a polymer substance useful in water treatment, paper composite material and heat insulator obtained by polymerizing an acrylamide compound in the presence of phosphoric acid (Abstract).

Kitani failed to teach the phosphorous acid group bonding to a nitrogen atom of an amide group in the acrylamide compound.

In an analogous art, Nagan teaches a polymer material used in water treatment obtained by reacting an acrylamide polymer with a phosphorous acid to provide a high charge density polymer (Abstract and Col. 2, lines 25-30). Nagan further teaches the phosphorous acid group (i.e. phosphono pendant) is attached to the amide group of the

polacrylamide backbone (Col. 2, lines 30-40). The disclosure is considered to read on the phosphorous-acid-group-containing (meth)acrylamide having a phosphorous acid group directly bonded to a nitrogen atom of an amide group in the (meth)acrylamide monomer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrive at the claimed phosphorous-acid-group-containing (meth)acrylamide composition because such a phosphorous-acid-group-containing (meth)acrylamide composition with phosphorous acid group bonded to an amide group (i.e. nitrogen containing group) in the (meth)acrylamide monomer is suggested by Kitani in view of Nagan in order to provide a high charge density polymer. Furthermore, any difference imparted by the product by process limitations would have been obvious to one having ordinary skill in the art at the time the invention was made because where the examiner has found a substantially similar product as in the applied prior art, the burden of proof is shifted to the applicant to establish that their product is patentably distinct, not the examiner to show the same process of making, see *In re Brown*, 173 USPQ 685 and *In re Fessmann*, 180 USPQ 324.

10. Claims 38, 43, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitani (JP Pub. 55-025473) in view of Nagan (U.S Pat. 5,393,436) as applied to the above claims, and further in view of Osada (JP Pub. 09-324391).

Kitani and Nagan are relied upon as set forth above. With respect to instant claims 38, 43, and 44, Kitani and Nagan failed to suggest (a) an unsaturated

comonomer (i.e. cross-linking agent) containing one or more ethylenically unsaturated bonds and one or more acid groups in a molecule, and/or (b) an unsaturated comonomer containing one or more ethylenically unsaturated bonds but no acid group in a molecule.

In an analogous art, Osada teaches the acrylamide (meta) system water-dispersion macromolecule comprising a cross-linking monomer having two or more ethylenically unsaturated bonds to provide sufficient paper durability effectiveness ([0018]-[0020]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the phosphorous-acid-group-containing (meth)acrylamide material of Kitani in view of Nagan by incorporating a cross-linking monomer containing ethylenically unsaturated bonds as suggested by Osada in order to provide sufficient durability effectiveness to paper.

11. Claims 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitani (JP Pub. 55-025473) in view of Nagan (U.S Pat. 5,393,436) as applied to the above claims, and further in view of Abe et al. (Machine English Translated JP Pub. 2003-257238 hereinafter, "Abe").

Kitani and Nagan are relied upon as set forth above. With respect to instant claims 45 and 46, Kitani and Nagan failed to suggest a polymer electrolyte membrane made of a phosphorous-acid-group-containing (meth)acrylamide comprising of (meth)acrylamide monomer and phosphoric acid.

Abe teaches a solid electrolyte membrane made of a phosphorous-acid-group-containing (meth)acrylamide comprising of (meth)acrylamide monomer and phosphoric acid having durability and mechanical strength. (Abstract, [0001-0002], [0012-0014], and [0035-0036]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the phosphorous-acid-group-containing (meth)acrylamide material of Kitani in view of Nagan in an electrolyte membrane as taught by Abe in order to provide a proton conduction membrane with durability and mechanical strength.

12. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitani (JP Pub. 55-025473) in view of Nagan (U.S. Pat. 5,393,436) further in view of Abe (JP Pub. 2003-257238) as applied to the above claims, and further in view of Osada (JP Pub. 09-324391).

Kitani, Nagan, and Abe are relied upon as set forth above. With respect to instant claims 47 and 48, Kitani, Nagan, and Abe failed to suggest (a) an unsaturated comonomer (i.e. cross-linking agent) containing one or more ethylenically unsaturated bonds and one or more acid groups in a molecule, and/or (b) an unsaturated comonomer containing one or more ethylenically unsaturated bonds but no acid group in a molecule.

Osada teaches the acrylamide (meta) system water-dispersion macromolecule comprising a cross-linking monomer having two or more ethylenically unsaturated bonds to provide sufficient durability effectiveness ([0018]-[0020]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the phosphorous-acid-group-containing (meth)acrylamide material of Kitani in view of Nagan further in view of Abe by incorporating a cross-linking monomer containing ethylenically unsaturated bonds as suggested by Osada in order to provide sufficient durability effectiveness.

Conclusion

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh T. Nguyen whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/590,569
Art Unit: 1796

Page 11

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

hm

KTN
12/05/2007

Lorna M. Douyon
LORNA M. DOUYON
PRIMARY EXAMINER